Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

The spectrum of the star is peculiar and it should be classified as belonging to the class Ro. The faintest traces of the spectrum extend to wavelengths somewhat below 3600 A and are probably to be ascribed to the head of the cyanogen absorption at 3590A, as the absorption bands with heads at 3883A, 4216A, 4390A and 4754A are very prominent. As shown by Dr. Shane and Dr. Rufus the first three absorption bands belong to cyanogen. The other two are well-known carbon bands. The head at 4737A is not so prominent. H and K are strong but λ4227 seems to be very weak. Several other absorption lines can be traced (e.g.λ4446) and some bright lines are suspected (e.g.λ4463). A comparison with the Ro star B.D. $-10^\circ.5057$ shows in general a good resemblance between the two spectra. One of the most marked differences is that the absorption bands stand out more prominently in the nova spectrum than in that of the R star.

In this connection it may be noted that the spectrum of the nova Z *Centauri*, which appeared close to the elongated (spiral?) nebula N.G.C. 5253, according to Miss Cannon, on a plate of July 18, 1895, resembled class R. An absorption band from 4640A to 4750A was noted and another having a center at about 4227A. Dr. Campbell found that the star had a continuous spectrum with maximum visual intensity in the yellow-green; the green blue was very faint whereas the blue was much brighter visually than the green-blue.

Some writers have contended that Z *Centauri* is not a nova but a variable, but a discussion of the magnitude observations (*Kungl. Svenska Vetenskaps akademiens Handl.* Bd. 60) favors the idea that the star is a nova. Of course it is not impossible that *Nova Aquilae* No. 4 really is a variable class R star with long period, altho this suggestion does not find much support in the observations we now have. It is very important that observers follow this peculiar star with photometric observations as long as possible.

Mt. Hamilton, Nov. 10, 1921. KNUT LUNDMARK.

THE PLANETARY DISK OF NOVA CYGNI (1920)

During this summer several spectrograms have been obtained with the slitless arrangement of the spectrograph described by Mr. Wright in the *Lick. Obsy. Bull.* No. 291. The records show that the nova has developed a nebulous disk in an analogous way as *Nova Aquilae* No. 3 during the summer of 1919. The photographic spectrum is continuous with the addition of broad bright bands corresponding to the following nebular lines: 3426, 3445, 3723, 3759, 3798, H_η, 3869, 3889, 3967-70, 4076, $H\delta$, $H\gamma$, 4363, 4472, 4542, 4641, 4686, $H\beta$, N_2, N. Arranged in the order of decreasing intensity the bands with the exceptions of the faintest are N_1, N_2, 4363, $H\beta$, 4641, $H\gamma$, $H\delta$, 4686, 3967-70, 3869, $H\zeta$.

The bands are very broad, of the order of 40A. It is not possible to say from the spectrograms whether they show any structure of the kind that has been studied in *Nova Aquilae* No. 3 by Moore and Shane. The three bands N_1, N_2 and λ4363 together with $H\beta$ and $H\gamma$ seem almost entirely responsible for the nebulous disk. The diameter of the bands is obtained in the same way as described by Wright in *Lick. Obsy. Bull.* 322 and the measures are given in the following table.

Date 1921	Pos. Angle of Diameter	Measured Diameter		Width of Cont. Spectr.	Probable Diameter of Disk
Aug. 11	0°	N_1	6″.1	1″.9	4″.2
		N_2	4 .9		3 .0
		4363	4 .0		2 .1
Sept. 20[1]	0	N_1-N_2	4 .7	1 .7	3 .0
		4363	3 .8		2 .1
Sept. 24	80	N_1	5 .5	1 .7	3 .8
		N_2	4 .3		2 .6
		4363	3 .9		2 .2
Sept. 27[2]	40	N_1	6 .9	2 .4	4 .5
		N_2	5 .9		3 .5
		4363	5 .6		3 .2
		$H\beta$	5 .8		3 .4
		$H\gamma$	4 .2		1 .8
				Means N_1-N_2	3 .7
				4363	2 .4

It is probable that the values above are measured somewhat too high as the continuous spectrum is weak and the bands strong. When measuring the polar diameter of *Mars*, Dr. Campbell pointed out (*A. J.* **15**, 144, 1895) how most of the different sources of error in the measures—spherical and chromatic aberration, imperfect atmospheric conditions, irradiation, diffraction and imperfect focus—tend to increase the measured value of the diameter. Most of those effects will increase the diameter of the nova disk on the plates, but, by subtracting the width of the continuous spectrum, the measures ought to give a value of the diameter not far from the real value. It is thought that the values given in the table are true within 0".5 and that we are justified in concluding that *a Nova Cygni* now has a planetary disk with an extension of 2-3 seconds of arc and that λ4363 produces a disk smaller than those due to N_1 and N_2.

---

[1] Keeler's Slitless spectrograph; small dispersion.

[2] Seed 60. Grain coarse and measures thus not so good as on the other plates.

The appearance of the nova as photographed with the Crossley reflecting telescope is that of a nebulous disk about three seconds of arc in diameter. Visual observations with the same instrument also show the nebulous disk.

On account of this disk the nova is now very hard to observe photometrically and care should be taken in observations of this kind. The star appears of different color in different instruments and the magnitudes thus come out rather different. The visual magnitude seems now to be close to 9.5 and the photographic magnitude on Crossley plates, by using Dr. Luytens standard scale in *M. N.* 81, 61, is 10.5. Since the outburst of the nova, the writer has made many estimates of its magnitude by using different instruments but he is not able to confirm the reported nebulous appearance of the nova during the autumn of 1920 and winter of 1920-1921. From photometric observations it does not seem probable that the nova reached the so called planetary stage before this last summer.

KNUT LUNDMARK.

Mt. Hamilton, November 15, 1921.